CORRELATES OF STABILITY FOR STRONG VOCATIONAL INTEREST BLANK PROFILES

by

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B. A. Beloit College, 1956

A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Psychology

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

1958

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INTRODUCTION

Vocational counseling is playing an increasingly important role in helping the individual to select an occupation which will prove satisfactory to him for a period of years or perhaps for the remainder of his working life. This is particularly true in colleges and universities where student personnel services are on the increase and where tests and measurements are being more widely adopted as they prove their usefulness to students, counselors, and administrators.

One of the oldest and most dependable of guidance tools available to the counselor is the Strong Vocational Interest Blank (SVIB). Empirically developed, and the subject of extensive and exhaustive research by Strong and others, this inventory has proved itself an invaluable help in describing the kinds of vocational activities the counselee might enjoy doing. Because the general validity of this instrument has been well substantiated, counselors have justifiably placed considerable faith in its results. One serious reservation regarding the usefulness of the inventory stands out, however. This concerns the stability of the results over time.

As Strong (20) has noted, the most significant shifts in interests are most likely to occur while a person is in the ages comprising the latter stages of his high school career and the early part of his collegiate experience. It is during this very age range that the student most frequently seeks the assistance of the vocational counselor. Thus in attempting to be of service to the individual student, the counselor has the problem of trying to identify those SVIB profiles which will remain relatively constant over the years and those profiles which will be subject to considerable change.

From the point of view of both the counselor and the counselee it would be advantageous if a method could be developed whereby the stability of SVIB profiles over a period of years could be identified. Despite the need for and interest in a measure of stability of SVIB profiles previous efforts have been relatively unsuccessful in uncovering such a measure. Therefore, in an attempt to fill this still unsatisfied need the investigation presented in detail here was undertaken.

REVIEW OF THE LITERATURE

A more complete description and background of the question of permanence or stability of interests will serve to point up the importance of this problem in counseling. As a means of providing a background for the present investigation of this topic, a review of the literature pertinent to three areas will be made: 1) the extent of permanence of interests, 2) previous attempts to devise methods of predicting stability of interests, and 3) a description of the theories of interest development which provided background from which the hypotheses of the present study were developed.

The Range of Permanence of Interests

Attempts to answer the above question have been made from many different approaches; test-retest correlations, letter-grade changes, profile correlations, and clinically judged stability have all been used. An excellent review of the pertinent literature in this area has been made by Smith (16). The results of his survey will be briefly summarized here; more detailed information can be found by referring to his Master's thesis.

Test-Retest Correlations. This method consists of correlating two scores for a group of individuals on the Strong, scores obtained at the beginning and end of an interval of time lasting from a period of months to one of several years. Product-moment correlations are then computed for each scale.

Strong (19, 21) retested large portions of a group of 285 college seniors 5, 10, and 22 years after graduation; he obtained correlations of .78, .77, and .64 for the 3 retests respectively. Canning, et al (3) retested 64 high school sophomores as seniors and found a median correlation of .57 for 7 scales. This compares to the .62 median r reported by Van Dusen (27) for a sample of 76 college freshmen retested 3 years later. Stordahl (17) reported on a group of 181 university sophomores who had first taken the SVIB as high school seniors. Using 44 scales, he obtained median test-retest r's of .72 and .67 for the subsamples of metropolitan and non-metropolitan students into which he had divided his original sample. An older group of gainfully employed men (the average age at first test was 34) was studied by Powers (12). Again all 44 scales were used, and the time interval was 10 years. The median r was .69.

The studies cited here have shown a high degree of stability in the rankings of individuals on the scales of the SVIB. Other studies have demonstrated that such high stability is not characteristic of the Strong alone; similar results have been obtained when the Kuder Preference Record was the test under consideration (Reid (13), Rosenberg (15).

Evidence presented above suggests that when using the test-retest method of measuring permanence of interests there appears to be a high degree of stability for all groups over varying lengths of time. It is to be noted that interests of older groups appear to be somewhat more permanent than those of adolescents.

While these results are encouraging to the counselor, they also hold out a warning signal for work with the individual student. For all groups studied, stability of interests appears high, but the results indicate that for any single case, stability cannot be assumed.

Letter-Grade Changes. Another index of stability or change of SVIB profiles, and one more suited to giving information about changes in the case of an individual is the use of letter-grade changes. Changes in letter grades on the Strong are usually indicative of significant amounts of change; also a measure of this nature is sensitive to some kinds of change which correlations mask.

Having retested 168 individuals in 1937 10 years after their original testing as college seniors and having scored their results on 18 keys, Strong (20) p. 366, concluded:

> Evidently if a senior had an A rating there was very little chance of his receiving anything but an A, a B+, or a B rating a decade later. Furthermore, there were 34.0 per cent C ratings in 1927; in ten years these had changed so that there were 21.4 per cent C ratings, 5.5 per cent C+ ratings, 4 per cent B- ratings, and 2.0 per cent B ratings. If a senior had a C rating in 1927, there are 2.3 chances in a hundred that it might be raised to a B+ in 1937 and 0.9 chance in a hundred that it might be raised to an A rating.

On the basis of 14 and 15 year retest follow up of Yale freshmen, Trinkhaus notes: "The data on changes in letter grades showed (a) the extreme scores to be most stable with the low scores being more stable than the high scores" (25, p. 646).

Stordahl's 181-man high school senior-college sophomore test-retest group led to the conclusion that (considering B+, B, and B- grades B's and C+, and C grades as C's) 73 per cent of C grades remain C's on the retest and 59 per cent of the A and of the B grades remain constant (18).

Canning, et al (3) using a 2-year test-retest interval during which their subjects were in high school found 64 per cent identical letter grades as compared to 63.3 per cent of identical ratings by Strong's college seniors retested after a 5-year period.

The evidence presented in connection with letter grade changes again indicates a high degree of stability but also sufficient discrepancy in test-retest comparisons to caution against predicting stability for all individuals. Although these studies show C grades to be most stable, A grades next, and B grades least stable, it should be noted that lumping B+, B, and B- grades and C+ and C grades together tends to make the difference between A and B stability disappear.

Test-retest correlations and letter-grade changes make comparisons on the basis of individual scales; it seems appropriate to review now an index based on the agreement of the whole profile in a test-retest comparison.

Profile Correlations. This index is computed by correlating the rankings of standard scores on test and retest. Such a measure is more meaningful to the counselor than are the previous two because it deals, as does the counselor, with the whole profile rather than with a particular scale.

The data of Strong (20,22) for both college seniors and college freshmen can be cited here. Using his group of Stanford seniors tested 5, 10, and 22 years after graduation, he found median rhos of .86, .82, and .76, respectively. With a sample of 306 Stanford freshmen he obtained median rhos of .88 for 1 year, .67 for 9 years, and .72 for 19 year intervals retests.

Taylor and Carter (24) provided data on 58 high school juniors retested a year later. A median rho of .74 was obtained for this group. High school students retested during their first two years in college in Stordahl's (17)

study yielded a median rho of .74 for his metropolitan group and .72 for his non-metropolitan group.

Once again Powers (12) study of 109 working men with a 10 year test-retest interval may be cited. A median rho of .80 for 44 scales was obtained for this group.

One finds here as previously that caution must be exercised, especially in attempting to speak about the individual case. It should be noted that the median r is the measure referred to in the evidence cited and that one-half of the cases fall below the high correlations noted above. Taking this into account, it will be well to review the literature which attacks the problem of stability from another angle, that of clinically judged stability.

Clinically Judged Stability. Hoyt (7) used 72 pairs of profiles from Stordahl's original data. He selected 8 pairs of profiles which correlated .50-.54, another 8 pairs which correlated .55-.59, and so on up to the last 8 which correlated .90-.94. Three experienced counselors then rated the profiles as to amount of difference in interpretation between the first and second profiles. The counselor rating and the measure of statistical stability had a rank order rho of .95. Further, this study revealed that a rho of .65 was equivalent to a counselor judgment that at least one major change had taken place.

Hoyt found that 17 per cent of the college sophomore-college senior profiles, 40 per cent of the high school senior-college sophomore profiles, and 47 per cent of the high school senior-college senior profiles, had rank order rhos of .65 or less indicating some major change in the clinical interpretation of them.

Strong (22) made two rough estimates of the stability of specific scores which were unstable, not of the whole profile. Upon inspecting 9510 scores

on 15 scales he found that in about 25 per cent of the cases the shift in letter grades was radical enough to induce a counselor to interpret the scores differently. Using test-retest scores on 34 scales for the first 10 freshmen in his files he found that 11 per cent of the changes in scores did affect the interpretation of the profile.

McCoy (11) found that roughly 2/3 of a sample of 8th to 10th graders had profiles clinically judged to have changed after an average retest period of 33 months. However, he used the Kuder Preference Record, a younger sample than did Hoyt and also a different method of determining stability. These factors make any direct comparison impossible.

Thus we see that estimates of the per cent of unstable profiles range from 11 per cent to 66 per cent. Because of variation in factors such as age of subjects, length of test-retest interval, and method of determining stability no more definite percentage can be drawn from these studies. However, the point remains that a sizeable proportion of students do have unstable interest profiles.

This fourfold consideration of the degree of stability of interests has yielded the same results from all four approaches: interests are stable to a rather high degree; but from the viewpoint of the counselor and the individual student, there is still considerable uncertainty as to whether or not a particular interest profile will remain relatively constant.

With this conclusion emphasizing the desirability of being able to predict stability or lack of it in interest profiles, a natural next step is to examine the attempts which have been made in trying to devise measures of stability.

Attempts to Devise Stability Scales

Once again the fine review of the literature prior to 1956 as done by Smith (16) will be heavily drawn upon in attempting to shed light on this problem.

The initial effort in this area was made by Strong (20) when in 1933, he published his original Interest Maturity Scale, this scale being designed to indicate the degree to which one had interests of 55-year old men or of 15-year old boys. Items on the SVIB which differentiated the two groups were used to construct the original Interest Maturity Scale (IMS).

Strong was not content with the original IMS and set about a revision of it. From his analysis he discovered that there was a characteristic change in interests from age 15 to age 25; after 25, the per cent of each age group liking or disliking various activities remained fairly constant.

Mindful of these results Strong constructed a revised IMS designed to differentiate between these two groups. He then put his scale to a test.

From a group of high school juniors he used those 10 with the lowest IM scores, 10 with IM scores equal to the median of the entire group, and the 10 who had the highest IM scores. When tests were given at ages 16.5 and 22.5 years, the mean IM score obtained for each group was, respectively: 28 and 45, 45 and 51, and 51 and 60. The profiles correlated .68, .79, and .91. From these results Strong concluded: "Evidently the higher the IM score at 16.5 years the less chance there is for occupational scores to change in the next few years and the more likely it is that such scores will agree on both occasions" (20, p. 281).

Stordahl's (17) more recent study cited earlier has cast considerable doubt on the validity of the IMS as a predictor of stability of interests.

On the basis of rank-order correlations obtained after a two year retest interval he divided his sample into high, average, and low stability groups. Because the small differences in mean scores on the IMS were not statistically significant, Stordahl was led to conclude: "These results fail to substantiate the assumption of a positive relationship between interest stability and interest maturity" (17, p. 341).

The conflicting reports by Strong and Stordahl led Hoyt (7) to add to the latter's data and analyze it more completely. Hoyt's further analysis suggested that Stordahl's findings were not explicable in terms of the short time interval between test and retest, nor in terms of the method of analysis. He further established that controlling the occupational saturation of the IMS failed to increase its sensitivity as a predictor of stability.

These negative conclusions regarding the IMS led Hoyt (7) to try to devise an empirical scale which would predict the stability of interest patterns.

Using the sophomores in Stordahl's group who were retested as seniors, a second sample provided by Powers (12) and described above, and lastly a group of 21 university high schools boys tested as sophomores and again as seniors, Hoyt found that only Powers group yielded a statistically significant correlation between his key and the measure of stability used. Not one of the three correlations obtained was large enough to be of practical significance.

The two unsuccessful attempts to devise stability scales described above concerned the Strong Vocational Interest Blank; an effort to devise a similar scale for the Kuder Preference Record (Vocational) Form C was reported by McCoy (11). As reported earlier he used 101 pairs of tests for females and 83 pairs for males. Experienced judges divided the coded profiles into "change" "stable", and "doubtful" groups. Of all the Kuder items, those which

differentiated the "change" group from the "stable" group at the 10 per cent level of confidence were used to form a scale for predicting stability.

McCoy then used a new sample of high school students who had two to three year intervals between test and retest. The stability scale failed to satisfactorily discriminate between the "change" and "stable" groups for either males or females.

As the above evidence adapted from Smith (16) indicates he was unable to find a single valid predictor of interest stability reported in the literature; consequently, in conjunction with Hoyt and Levy (8), he attempted to devise such a measure.

He used 176 of the group Stordahl (17) had tested as high school seniors in 1949 and again in 1951, and for a part of his study 116 of these men who had been retested again by Hoyt (7) in 1953. For purposes of this study the authors developed a Depth index which was based on comparisons of each of an individual's five high scales with all five low scales. Weights were assigned to every pair of occupations in accordance with the degree of intercorrelation between the scales. The Depth index was the sum of these values.

The Depth index yielded for the first time a statistically significant correlation between a measure of interest stability and stability of Strong profiles. When the authors divided their sample into those with Occupational Level (OL) scores above 55 and those with OL scores below 45, the r's between Depth index and Strong stability were -.58, and -.08, respectively. Encouraging as these results were it should be noted that the correlations obtained were not large enough to be of practical significance.

A further effort in this area is the study published by King (10). He investigated the relationship of 12 factors to the stability of SVIB

profiles, including age, Interest Maturity scores, General Aptitude Test Battery "G" scores, number of Primary patterns, number of Reject patterns, American Council on Education Psychological Examination scores, high school percentile rank, the Depth index (of Hoyt et al), socio-economic status, veteran status, marital status, and stated occupational goal.

His sample consisted of 242 male General College, University of Minnesota freshmen who took the SVIB first in the Fall Quarter of 1954 and were retested 9 months later.

Of the 12 factors tested only 3 gave results which were statistically significant. These were the number of Primary patterns, the Depth index and the congruence of stated occupational goal in business with a Primary pattern in SVIB group VIII. However, the predictive value of these factors, either singly or when optimally combined, was not high enough to be of practical predictive value.

Reflecting on these attempts to construct an index of the stability of interests leaves one with a discouraging lack of positive results. With the exception of Strong's original work with the IMS (work which was contra-indicated by Stordahl's and King's later studies), the attempts to find factors predicting stability have been largely unsuccessful. That the prediction of interest permanence is a problem of continuing importance to counseling cannot be overlooked because of the difficulty in arriving at a satisfactory solution, however.

The review of the literature thus far has endeavored to show that a major problem exists in working with the SVIB, and secondly, that the attempts to resolve this problem have been thus far largely unsuccessful. A

presentation will now be made in which several points of view as to the theoretical development of interests will be given, so as to provide a framework from which another attempt will be made to cast some light on the prediction of interest stability.

Theories of Interest Development

This section will be devoted to a review of summary statements of some major theorists in the area of vocational interest development. Such a review should provide a basis from which testable hypotheses may be developed concerning the prediction of interest stability.

As a beginning it may be well to review an article by Blau, et al (1) regarding a conceptual framework for a theory of occupational choice. Blau and his associates express the view that theirs is not a theory of occupational choice, but rather a framework for systematic research from which a theory might in due time be constructed.

It has been noted above that for a sizeable number of individuals measured interest patterns are unstable. This framework will serve to illustrate the number and complexity of factors involved in occupational choice or in the formation of vocational interests. As the reader notes the number of factors influencing the development of vocational interests, he will be made aware of the numerous points at which instability of interests might be fostered.

The authors view the final entry of an individual into an occupation as being immediately determined by eight factors which are the end results of two interrelated processes. One of these processes is the one which surround the development of the individual and which is capped by the periodic

construction (consciously or unconsciously) in the mind of the individual of two hierarchies. The individual constructs from his experience a hierarchical set of preferences for various occupations and also a set of expectations for being able to get into various occupations. His final occupational choice is the result of a compromise between these two hierarchies.

There are four immediate determinants of occupational choice. Occupational information is one of these determinants and refers to the knowledge people have about the requirements for entry, the rewards offered, and the opportunities for advancement. Another determinant is the set of technical skills which enable individuals to perform various occupational duties. A third, is the social characteristics that influence hiring decisions; such as skin color, race, or religion. Lastly, people's value orientations determine the relative strength of various types of rewards and thus the attractiveness which they offer.

Although the four factors mentioned above are the immediate determinants of occupational choice they in turn are the consequence of important socio-psychological attributes: general level of knowledge, abilities and educational level, social position and relations, and the individual's orientation to occupational life (its importance to him, his aspirations, etc.).

In this sequential chain of events which results in an occupational choice, the sociopsychological attributes noted above are strongly influenced by educational development, the process of socialization, the effects of available financial resources, and family influences.

Lastly, these personality developments are to an extent delimited by the individual's native biological endowment and the existing social structure, e.g., the system of social stratification, cultural values and norms,

demographic characteristics, the type of economy and its technology.

The discussion thus far has been concerned with a description of the four immediate determinants of occupational choice and their antecedant conditions. For purposes of clarity in explanation these factors have been artificially separated from a similar chain of sequences which result in occupational selection. Just as the individual's personal development resulted in the formulation of two hierarchies, an analagous formulation is pictured as the end result of the changes in the social structure resulting in selection.

Employers begin their occupational selection with a set of ideal standards of applicants for the available jobs. These ideal standards are either upheld or compromised in the direction of realistic estimates as to the qualifications of available workers until the openings are filled.

As was true for occupational choice, Blau and his associates also propose four immediate determinants of occupational selection. The first of these is the demand for new members in an occupation as indicated by the number of facancies extant at any one time. Demand will be influenced by such factors as size of the occupational group, its tendency to expand, and its turnover rate. Functional requirements are a second immediate determinant; reference is made here to the technical requirements needed for optimum performance of occupational tasks. Another factor is the non-functional requirements which enter the selection process; e.g., veteran status, good looks or the "proper" religion. A fourth determinant is the amount and types of rewards including income, prestige and power as well as opportunities for advancement, congenial fellow workers, and emotional gratifications.

Continuing the development of occupational selection analagous to that for the individual's personal development we see that these four immediate determinants are dependent upon the socioeconomic organization of the social structure. Included here is the occupational distribution and rate of labor turnover, division of labor, policies of relevant organizations (government, firms, unions, etc.), and the stage of the business cycle.

Once again we must look for the antecedant conditions, in this case, of the socioeconomic organization. These antecedants are historical changes, by which is meant trends in social mobility, shifts in industrial composition, historical development of social organizations, and changes in the level and structure of consumer demand.

Lastly, as a basis on which these historical changes are grounded we can look to social structure (as described in its influence on personal development) and physical conditions such as resources, topography, and climate.

Having reviewed a set of general concepts concerning occupational choice we might now consider several specific theories of vocational interest development. Among the earliest formulations regarding the origin and development of interests was the theory set forth by Carter (4).

Carter sees the young man or woman developing vocational attitudes in attempting a practical adjustment to environmental conditions. The individual's adjustment is limited by external realities such as home environment, needs, personalities of parents and friends, and cultural resources available to him. Certain other realities outside the individual's control such as his native equipment, physical traits, energy, mental ability

and so on also act as limitations. Further limitations are imposed by subjective factors which may fail to agree with realities as seen by unbiased observers.

Speaking about these subjective factors, Carter notes that the individual derives satisfaction or status from identifying with some respected group. The result of this identification is an interest in restricted activities and experiences; and a learning about the vocation and the vocational group. The individual persists with this identification until insurmountable discrepancies are felt between ability and the requirements of the vocation. With the occurrence of major obstacles the whole pattern of identification and adjustment is likely to be disrupted; subsequently a new attempt at vocational adjustment with an orientation toward a different occupational group is likely to be made.

The process of adjustment offers some basis for the integration of personality as the pattern of vocational interests gradually becomes closely identified with the self. The pattern involves organization of activities around judgment of the value of things. It leads to persistance in/or avoidance of activities, when those activities are seen in relation to the expanded ego. It tends to put an orderly pattern into relevant aspects of living, give the individual major drives and bases for long-time planning, and provide individualized backgrounds for decisions of many kinds.

Initially, many interest patterns are unsatisfactory solutions to the problems of adjustment. Disruption of an unworkable pattern and development of a new one, according to Carter, tends to make the vocational interest patterns of young persons become increasingly practical. Persistance in a bad pattern leads to increasing disappointment and frustration; while the fortunate choice of a workable interest pattern and opportunities for growth toward success in the chosen occupation may largely determine an individual's

happiness. For each individual there are probably several workable patterns each of which is a set of values that can find expression in one family of occupation but not in others.

The tendency to more practical and workable interest patterns is correct for groups but often inaccurate for individuals. "There is no single chronological age at which persons develop significant vocational interests" (4, p. 187).

Development of interests involves interaction between some biologically controlled and some educationally controlled growth processes. Growth here is a part of general maturation; consequently, the best adjustment requires the assimilation of realistic value systems to be found in our culture. "Such assimilation implies learning, choice, and development of character and personality . . . We have before us the task of finding out which educational and maturational factors are most significant" (4, p. 187).

Chronologically, in this review of some major theorists of interest development, the next viewpoint to be perused is that of E. K. Strong (20). Strong has not set forth a well-formulated theoretical statement as to the nature of interest development as did Carter above. Use will be made here of a summary collection of Strong's ideas on interest development as presented by Darley and Hagenah (5).

Strong characterizes human behavior as involving wants or desires or aspirations and also means to be used in reaching these goals. "The two phases of behavior do not have a common denominator: the former concerns motivation, the latter efficiency" (20, p. 4).

"Learning and motivation cannot be reduced to one set of terms, except in the sense that achievement is the resultant of both. The former has reference to effort and efficiency, the latter to desires, interests, and satisfactions" (20, p. 6).

Strong's further statements as to the development of interests are somewhat confusing. At one point he states that either interests are expressions of inborn characteristics or else they result from learning. He then goes on to state that since interests involve reactions to specific things, they are learned. As an example of the latter point, Strong notes that because white-collar jobs are esteemed, a boy looks for activities in that realm which fit his abilities. Were skilled trades equally regarded, many a boy would show an interest in such activities.

It should be noted, however, that Strong has never evidenced a desire to formulate a theory of development of vocational interests; he has been more concerned with the wealth of empirical data which his test has made available.

A much tighter knit and more rigorously formulated theoretical position is that presented by Bordin (2). Bordin speaks of vocational goals and aspirations as forming one of the mainsprings of an individual's actions. He states as his basic theory that "In answering a SVIB an individual is expressing his acceptance of a particular view or concept of himself in terms of occupational stereotypes." (2, p. 53).

Two clarifying corollaries of this position are: "1. The degree of clarity of an interest type will vary positively with the degree of acceptance of the occupational stereotype as self-descriptive. 2. The degree of clarity of an interest type will vary positively with the degree of knowledge of the true occupational stereotype." Implicit in the second corollary are the assumptions that those occupational stereotypes implicit in the SVIB are true stereotypes of the occupations involved and that all the occupations can truly be stereotyped.

Bordin includes in personality "the specific long and short-term goal-directed strivings of the individual . . . ." and says that his "view of interest patterns may be described as considering these patterns as by-products of the individual's personality." (2, p. 54). These strivings are in flux and consequently, the patterns of likes and dislikes are subject to change as self-concepts change.

Having thus described his major hypotheses, Bordin undertakes an explanation of some established facts about the SVIB. The significant relationship between father's occupation and son's interest type he fits into his theoretical framework "on the basis that a student's concept of himself is likely to be affected by an identification with the father." (2, p. 55). In regard to the fact that various personality characteristics have been shown to differentiate specific interest types from all others, Bordin's explanation is as follows. Because personality tests require an individual to present a picture of himself as does the SVIB, a logical assumption is that where a personality test covers traits involved in an occupational stereotype, the individual's responses to the two tests will be related.

He explains the demonstrated positive relationship between students' claimed and measured interests as being the result of a person's ability to manipulate the Strong so as to present any desired picture of himself. Continuity of interest patterns results from his assumption that the older an individual is the more likely he is to be established occupationally and the less likely that conditions will require an occupational change. Therefore, "where individuals do show changes, we can correlate these with changes in his situation and goals rather than ascribe them to error" (2, p. 59).

The small positive correlation found between interest scores and performance on achievement tests or course grades is due to the idea that information and achievement represent only one of the many potential factors in a person's interests.

Turning his theory to prediction of the outcomes of new hypotheses Bordin speaks first about relationships between father's occupation and son's measured interest. His general hypothesis here is, "The greater the identification with the father, the greater the relationship will be." (2, p. 60).

Regarding the relationships between personality and interest type: "Those occupational stereotypes which involve some differentiating personality characteristic will reflect that characteristic on tests of the trait." (2, p. 61). Hypothesizing as to the relationship between claimed and measured interests, he feels ". . . that the greater the knowledge of the occupational stereotype, the greater the relationship between claimed and measured interests." (2, p. 60).

Lastly, with regard to the continuity of interest type he assumes a college population tested and retested on the Strong over an appreciable interval of time. He divides such a population into the following groups:

> a. those who were following curricular plans consonant with their interest type at the first test and continued with these plans in the intervening period,
>
> b. those who were following curricular plans consonant with their interest type at the first test and changed to a curricular plan not consonant with the first test during the intervening period,
>
> c. those who were following curricular plans non consonant with their interest type at the first test and changed to a curricular plan which was consonant with their first test in the intervening period,

d. those who were following curricular plans non consonant with their interest type at the first test and continued with these curricular plans during the intervening period,

e. those who were following curricular plans non consonant with their interest type at the first test and changed to some other curricular plan still non-consonant with their first test in the intervening period. (2, p. 62).

His hypotheses concerning these groups are that group a will show the highest test-retest correlation, with group c having almost as high or as high an r as group a. Groups b and e will show the lowest test-retest correlation; and group d will vary within limits set by groups a and b. These deductions arise from the idea that a change in curriculum and a consequent change in goals, represent a change in self-concept; the more drastic this change in self-concept, the lower will be the test-retest correlation. It should be noted that low test-retest correlations may also result from modification of one's knowledge of the "true occupational stereotype".

Just as it seemed useful to begin this review of the theoretical development of interests with a conceptual framework so it seems appropriate to complete the review with a general sketch of some dimensions which such a theory might reasonably encompass.

After discussing a rather extensive survey of theories of interest development Darley and Hagenah (5) undertake such a synthesis. They begin by making a distinction between interests and abilities. Darley and Hagenah would classify "ability, aptitude and achievement measures as representing what Strong calls the 'efficiency' variables which are means to reaching certain goals." (5, p. 190). The goals, ends, or desires are defined as interests.

Fulfillment of such universal wants and desires as a feeling of importance can, of course, take many forms. For an understanding of the behaviors that emerge from these desires, the authors look to the genetic and developmental patterns of individual personality.

Their major thesis is "that occupational choice and measured occupational interests reflect, in the vocabulary of the world of work, the value systems, the needs, and the motivations of individuals. These choices or measured interests are, in effect, the end-product of individual development and the bridge by which a particular individual pattern of development crosses over to its major social role in our culture." (5, p. 191).

Within this framework, the authors have observed "that what people want out of life is related in some real degree to their occupational status." (5, p. 191). They postulate an occupational structure in which the job itself provides intrinsic satisfactions at the upper ends of the scale and at the lower ends satisfactions are extrinsic to the job tasks.

Darley and Hagenah feel also that many different jobs can satisfy the same set of individual personal needs. Among students of lesser ability they note discrepancies between claimed and measured interests; in this broad group it may be largely the "efficiency" variables which will resolve discrepancies. Among students in the higher ranges of ability a group for which there is generally a closer relation between claimed and measured interest, differences in personality structure resulting from genetic and developmental interaction may be used to explain discrepancies.

Lastly, they feel that any theory which links occupational choice and measured interests to personality development can encompass many empirical findings uncovered in their review, such as the early origin of interests

patterns, the considerable evidence of stability in measured interests and the occasional examples of instability, and so on.

This review of the literature has defined a problem in the use of vocational interest tests and has presented several viewpoints from which the problem might be investigated.

A choice must now be made as to which of these various systems will provide the most suitable basis on which to make another attempt to devise predictors of interest stability.

In such a consideration the formulation of Blau, et al (1) and those of Darley and Hagenah (5) may be discussed in similar terms. These two statements present good general descriptions of factors which must be taken into account in any useful theory of interest development but for purposes of this study, they provide no specific testable hypotheses concerning the prediction of stability of interests.

Neither Carter's theoretical formulation nor Strong's comments on interest development provide a closely-knit theory from which might be developed predictors of stability. These statements of theoretical positions are phrased in terms too general and too loosely organized to provide a base from which to predict interest stability.

Contrasted with the looseness and general nature of the above mentioned viewpoints is the rigorously stated and closely-organized theory presented by Bordin. The relative merit of Bordin's theory lends itself more readily to assessment than do the others reviewed because it is more definitely stated in terms of testable hypotheses. Bordin leaves little doubt as to the kinds of experimental questions which would constitute a test of his

theory. For this reason it seemed most reasonable to use Bordin's theoretical position as a basis from which to derive predictors of interest stability.

Thus the remainder of this study will be devoted to a test of several hypotheses concerning the prediction of interest stability which are grounded in Bordin's theory of interest development.

EXPERIMENTAL DESIGN

Hypotheses

As noted at the end of the review of literature, Bordin's theory of development of vocational interests seemed to be the theory which lent itself most readily to an experimental test. Basically, his theory states: "In answering a Strong Vocational Interest Test an individual is expressing his acceptance of a particular view or concept of himself in terms of occupational stereotypes." (2, p. 53).

The implication may be drawn from this statement that should an individual undergo changes in his self-concept or his concept of occupational stereotypes his vocational role as expressed in his SVIB profile would also show changes. It follows that measures of changes in either a student's self-concept or in his occupational stereotypes should enable one to predict changes in the individual's vocational interests.

It would perhaps be useful at this point to clarify terms. For purposes of this study self-concept is defined as that total list of adjectives which the individual is willing to accept as descriptive of himself. Such a list would include a description of his goals, values, abilities, etc.

Occupational stereotype is defined as that total list of adjectives which an individual uses to describe a particular job. This includes a description of the values, abilities, personal needs, etc., which the individual associates with this job.

To test Bordin's hypothesis, ways of assessing changes in self-concept or occupational stereotype are needed. Approaches to this problem gave rise to four specific hypotheses which the present study attempted to test. The first was a direct approach, relating perceived change in self-concepts and vocational stereotype to interest change.

Hypothesis 1. Stability of SVIB profiles is related negatively to the degree of perceived change in self-concept or occupational stereotypes.

Other approaches to the general hypothesis are suggested when one asks "Why are some individual's concepts stable while those of other individuals are unstable?" Taking the commonly held view that self-concept and occupational stereotype reflects the individual's background and experience, it seemed logical that the more encompassing these were (and thus the more adequately developed the self-concept or occupational stereotype was) the less likely that significant changes in them would take place. From this reasoning the second specific hypothesis was derived:

Hypothesis 2. Stability of SVIB profiles is related positively to the degree of development of the self-concept or occupational stereotypes.

Another approach to the relationship proposed by the general hypothesis can be made in terms of the grosser concept of personality characteristics. In particular the personality trait which seems relevant to the proposed relationship is that of flexibility or rigidity of personality. It seems logical to reason that a person who is characterized as being rigid should

strive to maintain his self-concept and occupational stereotypes much as they are; he will resist change in any of his ideas in general and of these concepts in particular. Thus it is possible to state a third specific hypothesis:

Hypothesis 3. Stability of SVIB profiles is related negatively to flexibility of personality.

A similar concept, suggested by Hoyt, et al (8) is that of personality integration. An individual whose characteristics are integrated (i.e., non-conflicting with each other; self-consistent) can be assumed to have developed a clearer, more stable picture of himself. If this is true, then from Bordin's general hypothesis, the following specific hypothesis may be proposed:

Hypothesis 4. Stability of SVIB profiles is related to the integration of personality.

Measuring Instruments

To test the specific hypotheses developed in the preceding section, it was necessary to devise numerous devices designed to measure the aspects of personality development described. It was also necessary to decide upon an adequate criterion measure; the criterion used is described below.

Criterion. As noted in the literature review, there have been a number of different methods used to measure the stability of vocational interests. The measure chosen for this study was the L-score devised by King (9). His research established the L measure as the most meaningful indicator of change in SVIB profiles of all the measures proposed. That is, it correlated higher with counselor ratings of change than did the other measures.

An L-score is arrived at by the following method. For each scale on the Strong one point is counted for each change in letter-grade category; thus a change from an A on the original testing to a B/ on the retest would be given one point for that occupational scale, a change from A to C would be given five points. The L-score is the sum of the points for each of the 44 scales.

Predictive Indices. It will be recalled that the first hypothesis stated that stability of SVIB profiles is related to perceived change in an individual's self-concept or occupational stereotypes. A questionnaire was designed to measure change in the following three aspects of these concepts: (a) self-assessment, (b) vocational stereotypes, and (c) philosophy of life. A copy of this questionnaire may be found in the appendix.

The subjects were asked to attempt to remember their 1955 ideas on the 120 items used and then to compare them with their current opinions on these items. They were then asked to note two types of change which might have taken place in their opinions. One of these was a change in direction of their opinion (i.e., from true to false); the other was a change in certainty of opinion (i.e., retaining a belief as either true or false but being more or less certain about the truth or falsity of such a belief).

An example of each of the three types of items used may serve to illustrate the kind of concept sampled. Under the section on self-assessment, the individual was asked to evaluate perceived change in such items as these: I make new friends easily. I read at a satisfactory rate. The section on vocational stereotypes may be illustrated thus: Sales jobs are

only for slick talkers. Professional people command prestige and respect. Philosophy of life was sampled by statements like these: God must be primarily good. Man's progress in this world is worth the effort.

When the questionnaires were filled out, a simple count was made of the number of direction changes and certainty changes marked in each of the three parts of the questionnaire.

Hypothesis two proposed that stability of Strong profiles was related to the degree of development of the self-concept and occupational stereotypes. Presumably self-concepts and concepts of occupational stereotypes are reflections of the breadth and depth of the individual's experience and the adequacy of his information with respect to himself and his environment. A questionnaire had been devised and administered at the time of the original SVIB testing which sought, in part, to sample: (a) breadth of experience, (b) knowledge of occupational and educational requirements, and (c) perceived knowledge of various occupational stereotypes. A copy of this questionnaire may be found in the appendix.

The concepts sampled may be illustrated by these samples. Breadth of experience sampled items like these: agreement with such statements as "I have worked most of every summer for the last four summers." Participation in such activities as having visited an art gallery or having written reports. Knowledge of occupational and educational requirements tested the accuracy of knowledge of the content of courses such as sociology and botany or of jobs such as purchasing agent and radio announcer. Perceived knowledge of various occupational stereotypes simply asked the student if he were familiar with the duties of men engaged in architecture, buyer, shop foremen, etc.

The third hypothesis stated that stability of Strong profiles was related to personality flexibility. A scale designed to measure this trait was included as part of the questionnaire mentioned in hypothesis two. This scale was adapted from Gough (6).

The fourth hypothesis stated that stability of SVIB profiles was related to the integration of personality. Such a concept defies measurement by a simple process. But it was reasoned that one indicator of integration might be a balance in intellectual development. Thus integrated individuals might be expected to have about equal Q and L scores on the American Council on Education Psychological Examination (ACE). The subjects were divided into two groups: Those whose Q and L scores on the ACE differed by less than 30 percentile points (equals group); and those whose Q and L scores differed by more than 30 percentile points (unequals group).

Sample

From the various 1955 freshmen pre-enrollment groups, a random sample (every other group) was selected to take the SVIB. Of the original 140 entering men tested in 1955, 90 were still enrolled at Kansas State College in December 1957. These 90 students constituted the present sample.

Methods and Procedure

Collection of the data was facilitated by the fact that certain information had been gathered at the time of the original Strong testing in 1955. The questionnaire of hypothesis two and the flexibility scale used in testing the third hypothesis were administered at that time. Results of the ACE used to test the fourth hypothesis were already available because this test is routinely administered as part of the entrance testing for freshmen at Kansas State.

The data needed to test hypothesis one had to be secured by means of the questionnaire described above. It was necessary to administer this questionnaire, as well as a retest of the Strong, to the 90 members of the sample.

After the retest Strongs had been scored, comparison was made between these profiles and those available from the original administration of the SVIB. From this comparison, an L-score for each subject was determined.

Statistical analysis of the data thus arrived at consisted for the most part of simple product-moment correlations. However, before actual tests of the hypotheses could be made it was necessary to conduct some preliminary checks on the data from the questionnaires used to test hypotheses one and two.

For the questionnaire of hypothesis one, preliminary correlations were run to determine whether or not the types of change (direction and certainty) were related. The resulting correlation of .256 suggested that the relationship between the two was sufficiently small to consider each of them separately in examining the hypothesis.

Further study revealed that there was a considerable relationship among the three parts of the questionnaire (self-assessment, philosophy of life, and occupational stereotype) for both direction change and certainty change. On the direction change measure, these parts intercorrelated .668, .698, and .746. For the certainty change measure, the correlations were .767, .723, and .663.

On the basis of these data it was decided to sum the scores for the three parts of the questionnaire, but to keep certainty and direction changes separate. That meant there would be two scores with which the first hypothesis might be tested.

A final preliminary check disclosed that the odd-even method of determining reliability yielded a correlation coefficient of .957 for the direction change part of the questionnaire and .962 for the certainty change part.

A similar procedure was followed for the questionnaire of hypothesis two. In this case preliminary correlations of .313, .274, and .095 indicated that interrelationships between the three parts of the questionnaire were not of a great enough magnitude to warrant combining them, as had been done in hypothesis one. Thus these measures were used singly to test the second hypothesis.

The first three hypotheses were tested by correlating the appropriate predictors variable or variables with the L-score criterion.

RESULTS AND DISCUSSION

It will be recalled that the first hypothesis posited a relationship between stability of SVIB profiles and indices measuring perceived changes in (a) an individual's self-assessment, (b) an individual's vocational stereotypes, and (c) an individual's philosophy of life. Since statistical analysis of the measuring device reported previously suggested the desirability of combining these three areas, but keeping "direction" (Dir) and "certainty" (Cer) indices separate, this hypothesis may be restated as follows: Hypothesis one (a) changes in certainty of self-concept and vocational stereotype will be positively related to changes in interests; Hypothesis one (b) changes in direction of self-concept and vocational stereotype will be positively related to changes in interests. These hypotheses were tested by correlating Dir and Cer and L.

The second hypothesis stated that a relationship exists between the stability of Strong profiles and indices measuring (a) breadth of experience

(A), (b) knowledge of occupational and educational requirements (B), and (c) perceived knowledge of occupational stereotypes (C). These relationships were tested for by means of correlating A, B, and C, respectively, with L.

Hypothesis three proposed a negative relationship between Strong profile stability and a measure of flexibility of personality (Fl). Once again, the test of the hypothesis was made by correlating the variable under consideration with L.

Table 1. Correlations between predictive indices and the criterion measure, L, for 90 subjects.

DIR	CER	A	B	C	Fl
.049	-.104	.068	-.127	-.149	-.192

None of the correlations obtained in testing the first three hypotheses were significantly different from zero at the five per cent level of probability. From this evidence the writer must conclude that the statistical data provide no support for any of the first three hypotheses, and that no significant relationship could be ascertained between the variables tested in these hypotheses and the criterion.

For the fourth and final hypothesis a somewhat different technique was used to carry out the test. The relationship posited here was that between Strong profile stability and integration of personality as measured by equality or inequality of numerical and verbal abilities. A test of this hypothesis was accomplished by testing for significance, the difference between the mean L-score for the equals group (E) and the mean L-score for the unequals group (U). A "t" value of .084 was found, which was not great enough to reject

the null hypothesis at the 5 per cent level of probability. That is, the slight difference between the means could well have been due purely to chance factors.

In summary, the results of the statistical analyses did not provide support for any of the four hypotheses tested, nor for the general hypothesis from which the specific hypotheses were derived. None of the correlations in the first three hypotheses reached either statistical or practical significance; the same was true of the difference between means used as a test of the fourth hypothesis.

Thus the results of this study have provided no basis for either group or individual prediction of SVIB profile stability over a two-year test-retest interval.

The primary purpose in undertaking this study was the hope of finding factors predictive of stability of Strong Vocational Interest Blank profiles. Unfortunately, the results obtained from the data uniformly failed to fulfill this ambition; no indices more predictive than chance happenings were established. Perhaps the value of the study might be increased by gleaning from it some suggestions for future research in this area.

1. Several suggestions may be made in terms of testing Bordin's theory of interests as was done in this study. The first of these is the development of more adequate measures of self-concept and occupational stereotypes than were used in the current study.

An initial refinement might be to discover a means of sampling significant or intense experiences of the individual rather than simply a broad range of experiences as was done in this study.

2. Use of a "before" and "after" questionniare method would perhaps lead to better prediction than that based on a questionnaire sampling perceived change over a two year interval as used here. Asking a subject to recall his ideas as they were two years previously is not the most desirable method of obtaining a basis for comparison with his present ideas. Undoubtedly, a more accurate assessment of change in self-concepts or occupational stereotypes could be gathered by administering the same measure of these concepts at the beginning and end of a suitable time interval.

The author realized that this would have been a better procedure than the one used in this study but felt that since time did not permit the use of this before and after device, using the present method was better than neglecting to test the underlying idea.

3. The measure of personality integration used in the present study was at best a flimsy measure of such a complex concept. Although no significant findings for this concept were discovered in this study, a study by Smith (16), suggested that the idea of personality integration might still be a worthwhile area of investigation.

4. The preceding suggestions have pointed up shortcomings in the present study. These deficiencies make it extremely difficult to assess the value of the theory on which the study was based. An implication that may be drawn, however, is that if the underlying theory had outstanding promise for research in this area, it probably would have to some extent succeeded in producing significant results despite the somewhat faulty methods employed. Thus while no definite statement can be made in regard to the value of the theory, the implication is that its usefulness may at best be limited.

This study failed in its attempt to find predictors of stability of measured vocational interests; nevertheless, the problem remains as an important one for the counselor and future attempts must still be made to find such predictive indices. In looking to future research in this area, the following suggestions might be made.

1. One of the most apparent suggestions can be made in terms of the underlying theory of interests on which the study was based. It need hardly be mentioned that lack of a satisfactory theory of vocational interest development has handicapped significant research in this area. Fortunately, as noted in the review of the literature, much thought is being devoted to the problem of theory and it is hoped that the work of Tyler (26), Roe (14), Super (23), and others should, in the near future, improve our theoretical understanding of interests.

2. Perusal of the correlations obtained in this study revealed that a correlation of greater magnitude than the others was obtained from the measure of a personality trait.

Undoubtedly, interest stability is related to not one but several factors in the individual's makeup. The fact that the personality characteristics used was more promising than any of the other variables, might be interpreted as indicating that current interest theory is correct in placing heavy emphasis on the personality characteristics of the individual.

Certainly, little faith can be placed in the flimsy evidence obtained in this study but the suggestion for future research might be that the personality characteristics of the individual are at least as important in determining interest stability as are the experiences he will undergo.

3. Finally, future research might well take into account the suggestion of Darley and Hagenah (5). They feel that among students of high abilities Bordin's ideas of self-concepts and vocational stereotypes might better explain discrepancies between measured interests and claimed interests; while for students of low abilities such discrepancy may be explained in terms of ability.

From this idea we may infer that the concepts of Bordin used in this experiment might be considerably more predictive of interest stability for groups of high ability than for those of average or low abilities. No such distinctions in terms of ability were made of this study but they might help to define the problem of predicting interest stability more clearly in future investigations.

SUMMARY AND CONCLUSIONS

Summary

This study was concerned with investigating the general hypothesis that self-concept and occupational stereotypes are related to measured vocational interests. This general hypothesis was tested by means of the following four specific hypotheses:

1. Stability of SVIB profiles is related negatively to the degree of perceived change in self-concept or occupational stereotypes.

2. Stability of SVIB profiles is related positively to the degree of development of the self-concept or occupational stereotypes.

3. Stability of SVIB profiles is related negatively to flexibility of personality.

4. Stability of SVIB profiles is related to the integration of personality.

The sample for this study was composed of 90 Kansas State College junior men. These men had originally taken the Strong test during the summer of 1955 and were retested in December of 1957. The questionnaire and flexibility scale used to test hypotheses two and three had been administered at the time of the original Strong testing as had the ACE which provided the basis for testing hypothesis four. At the time of retesting, the questionnaire used to test hypothesis one was given.

A single criterion was used. The L-score measure of SVIB stability as developed by King (9) was employed for the profile changes over the 29-month test-retest period.

From the hypotheses seven predictive indices were developed. Statistical tests of the hypotheses were then made by these two methods.

1. Correlational analysis.

2. Testing a mean score difference for significance.

Correlational analysis was carried out by correlating each of the six indices derived from the first three hypotheses with the criterion. For the final predictive index developed from the fourth hypothesis, two groups of "equal" and "unequal" verbal and numerical abilities were defined. Mean L-scores for these two groups were then computed and the difference between means tested by the t test.

Conclusions

Within the limitations imposed by the sample and the methods the following conclusions may reasonably be drawn:

1. None of the four hypotheses were supported by the data. No significant relationship was established between the criterion and any of the predictive indices.

2. The results of this study raise considerable doubt as to the validity of Bordin's theory relating self-concept and occupational stereotype to vocational interests. Shortcomings of methods used in this investigation make a definite assessment of the theory difficult; however, lack of any significant findings suggest that the theory may have only limited usefulness.

3. Lastly, suggested improvements in methodology and procedure for future investigations were made.

ACKNOWLEDGMENTS

The author wishes to take this opportunity to express heartfelt thanks for the inspiration, assistance, and patient encouragement given by Dr. Donald P. Hoyt in the completion of this study. His help has been of inestimable value in designing, carrying out, and refining the study described on these pages.

An expression of gratitude is due also to the members of the staff of the Counseling Center here at Kansas State. The counselors are to be thanked for their helpful discussion, criticisms, and suggestions at all stages of the project. To the secretaries, Diana Mellor, Roberta Chipp, and Beverly Birtell, thanks are given for their cheerful bearing of clerical and discussion burdens connected with the project.

REFERENCES

(1) Blau, P. M., John W. Gustad, Richard Jessor, Herbert S. Parnes, and Richard C. Wilcock.
Occupational choice; a conceptual framework. Industr. and Labor Relat. Rev., 1956, 9, 531-543.

(2) Bordin, E. S.
A theory of vocational interests as dynamic phenomena. Educ. Psychol. Measmt., 1943, 5, 49-65.

(3) Canning, L., Katherine Van F. Taylor, and Harold D. Carter.
Permanence of vocational interests in high school boys. J. Educ. Psychol., 1941, 32, 481-494.

(4) Carter, H. D.
The development of vocational attitudes. J. Consult. Psychol., 1940, 4, 185-191.

(5) Darley, J. G. and Theada Hagenah.
Vocational interest measurement, theory, and practice. Minneapolis: University of Minnesota Press, 1955.

(6) Gough, H. G.
California Psychological Inventory. Berkeley: The University of California Printing Department, 1951.

(7) Hoyt, D. P.
Measurement and prediction of the permanence of interests. Proceedings of the conference on interest measurement, University of Minnesota Press, 1954.

(8) Hoyt, D. P., James L. Smith, Jr. and Seymour Levy.
A further study in the prediction of interest stability. J. Counsel. Psychol., 1957, 4, 228-233.

(9) King, L. A.
Stability measures of Strong Vocational Blank profiles. J. Appl. Psychol., 1957, 41, 143-147.

(10) King, L. A.
Factors associated with vocational interest profile stability. J. Appl. Psychol., in press.

(11) McCoy, R. A.
Stability and change of measured vocational interests of high school students. Unpub. Thesis (Ed.D.), 1954, Univ. of Missouri.

(12) Powers, Mabel K.
A longitudinal study of vocational interests during the depression years. Ph.D. Thesis, 1954, Univ. of Minnesota.

(13) Reid, J. W.
Stability of measured interests in young adults. J. Educ. Res., 1951, 45, 307-312.

(14) Roe, Anne
The psychology of occupations. New York: John Wiley and Sons, Inc., 1956.

(15) Rosenberg, N.
Stability and maturation of Kuder interest patterns during high school. Educ. Psychol. Measmt., 1953, 13, 449-458.

(16) Smith, J. L., Jr.
Prediction of the permanence of interests. Unpublished master's thesis, Kansas State College, 1956.

(17) Stordahl, K. E.
Permanence of interests and interest maturity. J. Appl. Psychol., 1954, 38, 339-341.

(18) Stordahl, K. E.
Permanence of Strong Vocational Interest Blank scores. J. Appl. Psychol., 1954, 38, 423-427.

(19) Strong, E. K., Jr.
Permanence of vocational interests. J. Educ. Psychol., 1934, 25, 336-344.

(20) Strong, E. K., Jr.
Vocational interests of men and women. Stanford: Stanford University Press, 1943.

(21) Strong, E. K., Jr.
Permanence of interest scores over 22 years. J. Appl. Psychol., 1951, 35, 89-91.

(22) Strong, E. K., Jr.
Vocational interests 18 years after college. Minneapolis: University of Minnesota Press, 1955.

(23) Super, D. E.
The psychology of careers. New York: Harper and Brothers, 1957.

(24) Taylor, Katherine V. F. and H. D. Carter.
Retest consistency of vocational interest patterns. J. Consult. Psychol., 1942, 6, 95-101.

(25) Trinkhaus, W. K.
The permanence of vocational interests of college freshmen. Educ. Psychol. Measmt., 1954, 14, 641-647.

(26) Tyler, Leona E.
The development of interests. Proceedings of the conference on interest measurement, University of Minnesota, 1955.

(27) Van Dusen, A. C.
Permanence of vocational interests. J. Educ. Psychol., 1940, 31, 401-424.

APPENDIX

Opinion-Attitude Survey

People change from time to time in their opinions and attitudes. They may change either in direction (e.g., what was thought to be true is now thought to be false) or in certainty (e.g., a person may believe the same things but become more or less certain that he is correct in his belief). We would like to determine in this survey the degree and kind of changes you have experienced in the past two years.

In order to do this, it will be necessary for you to think back to the time when you first came to K-State in 1955. Try to recall your attitudes and opinions then, and compare them with your present feelings.

If your present opinion differs in direction from your 1955 opinion, place a check mark (✓) in Column 1 of your answer sheet. Leave Column 1 blank if the direction of your attitude hasn't changed. Next, whether or not the direction of your opinion has changed, indicate if there has been a change in certainty by checking either Column 2, 3, or 4. Check (✓) Column 2 if you are now less certain, Column 3 if you are now more certain, and Column 4 if you feel about the same as far as certainty is concerned.

MAKE NO MARKS ON THIS QUESTIONNAIRE: ALL ANSWERS SHOULD BE MADE ON THE SEPARATE ANSWER SHEET.

Part I.

On this part of the questionnaire, there are a number of statements which may or may not describe you. Decide first if you would have said "True" or "False" when you were an entering freshman in 1955; then decide how you would answer the same question today. Check Column 1 on your answer sheet if your answer would have changed from "True" to "False" or from "False" to "True". Then check Column 2, 3, or 4 depending on whether you feel less certain now than in 1955 (Column 2), more certain now (Column 3), or about the same (Column 4).

1. I make new friends easily.
2. I have a good time at a party where I am a stranger to most of the people.
3. I get along well with a group of girls.
4. I get along well with a group of fellows.
5. I easily make friends with a stranger.

6. I manage to get along all right with people I don't like.
7. I maintain a cheerful optomistic outlook most of the time.
8. I retain my poise under difficult or trying conditions.
9. I approach most tasks with the feeling that I will probably be successful in them.
10. I usually am aware of other people's feelings and take them into account before acting.

11. I can carry on a conversation with a stranger.
12. I often am the leader in activities or discussions.
13. I accept criticism without being hurt.
14. I get things done by myself with little or no help from others.
15. I am generous.

16. I can return items to a store for a refund without feeling embarrassed.
17. I can undertake work which would isolate me from people for long periods of time.
18. I am able to carry on an activity in front of another person or a group without feeling self-conscious about it.
19. I usually make a decision before the time for action has passed.
20. I enjoy occasionally spending an evening alone.

21. I can resist a sales talk if I have no need for the product.
22. I read at a satisfactory speed.
23. I usually understand most of what I have read.
24. I can work math problems satisfactorily.
25. I understand the ideas presented in science courses.

26. I write grammatically correct sentences.
27. I write sentences which are punctuated correctly.
28. I can use the library facilities to find something I need.
29. I can compose a good speech.
30. I can give a good speech.

31. I do laboratory work satisfactorily.
32. I take good lecture notes.
33. I understand most theoretical things if they are well explained.
34. I can work problems in science courses.
35. I study efficiently.

36. I do well in courses like economics, sociology, or history which require reading and understanding of ideas.
37. I can make a logical argument to defend my viewpoint.
38. I like almost all school subjects.
39. I enjoy studying.
40. I "choke-up" on examinations.

Part II.

On this part of the questionnaire, we want to find out whether your ideas about different sorts of jobs have changed any since you first entered K-State. Proceed as before by checking Column 1 if your 1955 answer would differ from your present answer. Then indicate if you now feel less certain of your answer (Column 2), more certain (Column 3), or about the same (Column 4).

41. Being a big businessman requires being slightly dishonest.
42. People in technical occupations (e.g., engineer) generally make a great deal of money.
43. Being a teacher means having considerable prestige.
44. Working with one's hands is not very well regarded by most people.
45. Sales jobs are only for slick talkers.

46. Salesmen as a whole are not very well paid.
47. People working in the arts have few good jobs available.
48. College graduates make much more money than people who don't go to college.
49. Few people in business occupations make much money.
50. Blue collar workers make less money than white collar workers.

51. Technical and scientific people command much prestige.
52. People in the healing professions (e.g., doctor, dentist) all make a considerable amount of money.
53. Being a professional man requires being honest.
54. Blue collar workers have below-average I.Q.'s.
55. Professional people command prestige and respect.

56. Having a college degree enables one to get a good job.
57. Engineering requires people with much determination and ability to stick to a job.
58. Engineers work primarily with machines and equipment.
59. People who are in occupations where they help others are better liked than people in other occupations.
60. People who are in occupations where they help others derive many intangible benefits from their work.

61. All lawyers need to be good public speakers.
62. Discipline is the most serious problem for high school teachers.
63. Professional people are well cultured.
64. People in the arts are usually very odd, "different" people.
65. Physicians are people who are interested in helping others.

66. Mechanical engineers are concerned primarily with maintenance and repair of complex machinery.
67. Businessmen are concerned more with making money than anything else.
68. A teacher's main interest is in helping others.
69. Salesmen like to be with people.
70. A geologist's work is mostly out-of-doors.

71. Agricultural economists are more interested in business than in agriculture.
72. What an engineer knows is more important to his success than is his personality.
73. Scientific research workers spend most of their time in just thinking.
74. Accountants spend most of every day working with figures.
75. Successful farming depends mostly on hard work and good weather.

76. Truck drivers earn more money than teachers.
77. Most skilled trade workers now have financial security.
78. Chemists spend most of their time in the laboratory.
79. Personnel work consists mostly of talking to people.
80. Business executives are very intelligent.

Part III.

On this part of the questionnaire, there are a number of statements relating to philosphical attitudes and beliefs. Proceed as before by checking Column 1 if your answer would have changed from "True to False" or from "False" to "True", since 1955. Then indicate if you now feel less certain of your belief (Column 2), more certain (Column 3), or about the same as far as certainity is concerned (Column 4).

81. God exists.
82. There is a value in having churches.
83. Religion has a personal value to me.
84. The world would soon come to an end without religion.
85. I need a God.

86. God must be primarily good.
87. My actions as a citizen can have a real influence on the course of our government.
88. I believe it is a good idea to accept the standards imposed by the groups which one is a member.
89. It is important to be popular ("a good guy") in the groups of which I am a member.
90. In order to develop my potential to the greatest it is necessary to be a member of many social organizations.

91. The best way to get things done is through group action.
92. It is important for me to be concerned with what happens to my neighbors.
93. I should make a contribution to the life of the community in which I live.
94. It is important for the United States to be concerned with what happens to the rest of the world.
95. I should make some personal contribution to the world.

96. I think I am predominantly a worthwhile individual.
97. What I do makes little difference to other people.
98. It is important for me to be primarily a leader.
99. God or religion are of no real practical use to man.
100. Making a great deal of money is important to me.

101. The end sometimes justifies the means.
102. Much of the world's woe is due to an over-regard for money.
103. Things must be useful to justify their existence.
104. I need a moral code to guide my behavior.
105. People seldom try to live by a moral code.

106. There are times when it is morally right to break the law.
107. Life has an end goal of some kind.
108. The future has a bright outlook.
109. The world is becoming a better place to live.
110. Man's progress in this world is worth the effort.

111. Man has control of his own future.
112. It is important for different ideas or parts of objects to be in harmony with each other.
113. I can appreciate things simply because they are harmonious or graceful.
114. Man is, by nature, selfish.
115. Man is, by nature, both good and bad.

116. People are so different that one cannot speak meaningfully of the "nature of man".
117. No one would ever fall in love if love were not returned.
118. People who live by ideals usually do so in order to justify their failures.
119. Most religious people are that way because they are afraid.
120. It is ethically wrong to try to impose one's own values and beliefs upon someone else.

Vocational Information and
Attitudes Inventory.

VOCATIONAL INFORMATION AND ATTITUDES INVENTORY

PART I - Read each statement, decide how you feel about it, and then mark your answer on the special answer sheet. If you agree with the statement, or feel that it is true about you, mark space one. If you disagree with the statement, or feel that it is not true about you, mark space two. Ignore spaces 3, 4, and 5 on the answer sheet for this part of the inventory.

1. I often start things I never finish.
2. I always see to it that my work is carefully planned and organized.
3. I am in favor of a very strict enforcement of all laws, no matter what the consequences.
4. In group projects, I usually do more than my share.
5. I find that a well-ordered mode of life with regular hours is congenial to my temperament.
6. I often wish people would be more definite about things.
7. I dislike "eager beavers."
8. I cannot keep my mind on one thing.
9. I think I am stricter about right and wrong than most people.
10. A strong person will be able to make up his mind,even on the most difficult questions.
11. I began dating 4 or more years ago.
12. I don't like to work on a problem unless there is the possibility of coming out with a clear-cut and unambiguous answer.
13. I was considered to be quite popular in high school.
14. I have had more than my share of things to worry about.
15. Once I have my mind made up I seldom change it.
16. I have received special recognition by the Legion, or other community organizations. (Citizenship awards, Boys State, etc.)
17. I don't like things to be uncertain and unpredictable.
18. It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.
19. I participated in 4 or more activities in high school (athletics, plays, school paper, band, committees, etc.).
20. Our thinking would be a lot better off if we would just forget about words like "probably," "approximately," and "perhaps."
21. I never make judgments about people until I am sure of the facts.
22. For most questions there is just one right answer, once a person is able to get all the facts.
23. I wish I could vote in state and national elections.
24. I am known as a hard and steady worker.
25. The trouble with many people is that they don't take things seriously enough.
26. I would like to supervise others.
27. I set a high standard for myself and I feel others should do the same.
28. Most of the arguments or quarrels I get into are over matter of principle.
29. People who seem unsure and uncertain about things make me feel uncomfortable.
30. I often wish people would be more definite about things.
31. My parents depend upon me a great deal.
32. I earn most of my own spending money.
33. I have worked most of every summer for the last four summers.
34. I am usually one of the officers in the organizations to which I belong.
35. My teachers seem to depend upon me.

36. I have had complete responsibility for a day or more while my employer was away from work.
37. I usually work at least 10 hours every week after school and on Saturdays.

PART II - Consider each of the following activities. Mark space one if you have ever participated in such activity. Mark space two if you have not. Ignore spaces 3, 4, and 5 on the answer sheet for this part of the inventory.

38. Repairing a clock
39. Adjusting a carburetor
40. Repairing electrical wiring
41. Cabinetmaking
42. Operating machinery
43. Handling horses
44. Giving "first aid" assistance
45. Raising flowers and vegetables
46. Decorating a room with flowers
47. Making a speech
48. Organizing a play
49. Opening conversation with a stranger
50. Teaching children
51. Teaching adults
52. Adjusting difficulties of others
53. Doing research work
54. Acting as a yell-leader
55. Writing personal letters regularly
56. Writing reports
57. Displaying merchandise in a store
58. Saving money
59. Raising money for a charity
60. Living in the city
61. Selling
62. Collecting rocks
63. Taking responsibility for part of a business enterprise.
64. Entertaining others in my home
65. School athletic team
66. School play
67. School debate
68. School musical activities
69. Living in the country
70. Traveling in more than three states
71. Card playing
72. Visiting amusement parks
73. Visiting art galleries
74. Visiting zoos
75. Attending conventions, state or national meetings of organizations
76. Attending formal parties
77. Fishing
78. Hunting
79. Working after school
80. Working during summers

PART III - Listed below on the left are occupations and school subjects in groups of four. On the right are definitions in groups of five. You are to choose the best definition for each occupation or school subject and blacken the corresponding space on the answer sheet opposite the number of the terms being defined. Definitions may be used more than once.

81. Sociology
82. Psychology
83. Philosophy
84. Economics

1. Study of the origin and use of words
2. Study of human behavior
3. Study of laws affecting production and distribution of wealth
4. Study of form and function of human groups
5. Study of general principles of reality

85. Calculus
86. Accounting
87. Entomology
88. Humanities

1. Study of human diseases
2. Study of systems of recording and explanation of business transactions
3. Study of advanced mathematics
4. Study of cultural expressions in man
5. Study of insects

89. Zoology
90. Botany
91. Physiology
92. Geology

1. Study of plants and their development
2. Study of matter and motion
3. Study of the functions of the parts in living organisms
4. Study of structure and development of animals
5. Study of the structure of the earth and the ways it changes

93. Mechanical Engineer
94. Draftsman
95. Physicist
96. Mathematician

1. Acts as adviser and assistant in research in engineering, physics, astronomy, etc.
2. Repairs and operates heavy equipment and mechanical apparatus.
3. Specialist in the designing, installation, and maintenance of tools, machines, and industrial equipment.
4. Performs research dealing with laws of motion, gravity, liquid pressure, electricity, etc.
5. Prepares accurate working plans and detailed drawings for engineering and manufacturing purposes.

97. Production Manager
98. Personnel Worker
99. Purchasing Agent
100. Public Relations Man

1. Co-ordinates and regulates work of office and shop. Improves efficiency.
2. Selects and prepares favorable information for a group or organization and arranges for its distribution.
3. Selects equipment and supplies necessary for the operation of the company in which he is employed.
4. Assists in recruiting, training, rating, and placement of employees.
5. Prepares invoices, keeps records of company activities.

101. Physical Therapist	1. Makes blood and urine analysis.
102. Laboratory Technician	2. Supervises art and craft activity for hospital patients.
103. Pharmacist	3. Administers treatment of muscles under supervision of physician.
104. Occupational Therapist	4. Prepares medical compounds.
	5. Assists with bed making and care of patients under supervision of registered nurses.
105. C.P.A.	1. Examines and advises concerning records of business transactions.
106. PhD	2. Examines and cares for spiritual needs of men.
107. B.D.	3. Examines and encourages intellectual development.
108. D.V.M.	4. Examines and cares for physical needs of animals.
	5. Examines and cares for eyes and vision of men.

PART IV - Listed below are two groups of four occupations. In the parallel group are school subjects. You are to choose the subject area in which the student preparing for each of the occupations would take the most courses. Subject areas on the right may be used more than once.

109. Industrial Engineer	1. Business
110. Horticulturalist	2. Biological sciences
110. Radio announcer	3. Botany
112. Physical Education Teacher	4. Psychology
	5. Foreign languages
113. Statistician	1. Physiology
114. Physician	2. Mathematics
115. Soil Scientist	3. Freehand drawing
116. Architectural Engineer	4. Chemistry
	5. Accounting

PART V - Listed below are a variety of occupations. Mark space one if you think you are familiar with the general duties performed in this occupation. Mark space two if you are not familiar with the occupation. Ignore spaces 3, 4, and 5 on the answer sheet for this part of the Inventory.

117. Accountant
118. Architect
119. Astronomer
120. Auctioneer
121. Building Contractor
122. Buyer
123. Ceramic Engineer
124. Certified Public Accountant
125. Chiropractor
126. Counselor
127. Dental Hygienist
128. Electrical Engineer
129. Floorwalker

130. Interior Decorator
131. Labor Arbitrator
132. Machinist
133. Meteorologist
134. Mortician
135. Optometrist
136. Parole Officer
137. Personnel director
138. Pharmacist
139. PhotoEngraver
140. Printer
141. Psychiatrist
142. Public Administrator
143. Public Relations man
144. Retailer
145. Sculptor
146. Shop foreman
147. Social worker
148. Statistician
149. Stock broker
150. YMCA secretary

CORRELATES OF STABILITY FOR STRONG VOCATIONAL INTEREST BLANK PROFILES

by

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B. A. Beloit College, 1956

AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Psychology

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

1958

The overall purpose of this study was to attempt to discover indices capable of predicting stability of Strong Vocational Interest Blank profiles. Bordin's theory relating self-concept and occupational stereotype to measured vocational interests was used as the theoretical basis from which were derived the following four specific hypotheses.

1. Stability of SVIB profiles is related negatively to the degree of perceived change in self-concept or occupational stereotypes.

2. Stability of SVIB profiles is related positively to the degree of development of the self-concept or occupational stereotypes.

3. Stability of SVIB profiles is related negatively to flexibility of personality.

4. Stability of SVIB profiles is related to the integration of personality.

The criterion chosen for this study was the L-score devised by King (9). His research had established the L-score as a meaningful indicator of change in SVIB profiles.

The first hypothesis posited a relationship between stability of SVIB profiles and indices measuring perceived changes in (a) an individual's self-assessment, (b) an individual's vocational stereotypes, and (c) an individual's philosophy of life. Since statistical analysis of the measuring device suggested the desirability of combining these three areas, but keeping "direction" (Dir) and "certainty" (Cer) indices separate, this hypothesis may be restated as follows: Hypothesis (a) changes in certainty of self-concept and vocational stereotype will be positively related to changes in interests; Hypothesis (b) changes in direction of self-concept and vocational stereotype will be positively related to changes in interests. These hypotheses were tested by correlating Dir and Cer with L.

The second hypothesis stated that a relationship exists between the stability of Strong profiles and indices measuring (a) breadth of experience (A), (b) knowledge of occupational and educational requirements (B), and (c) perceived knowledge of occupational stereotypes (C). These relationships were tested for by means of correlating A, B, and C, respectively, with L.

Hypothesis three proposed a negative relationship between Strong profile stability and a measure of flexibility of personality (Fl). Once again, the test of the hypothesis was made by correlating the variable under consideration with L.

The relationship posited in the fourth hypothesis was that between Strong profile stability and integration of personality as measured by equality or inequality of numerical and verbal abilities. A test of this hypothesis was accomplished by testing for significance, the difference between the mean L-score for the equals group (E) and the mean L-score for the unequals group (U).

From the various 1955 freshmen pre-enrollment groups, a random sample (every other group) was selected to take the SVIB. Of the original 140 entering men tested in 1955, 90 were still enrolled at Kansas State College in December 1957. These 90 students constituted the present sample.

Within the limitations imposed by the sample and the methods the following conclusions may reasonably be drawn:

1. None of the four hypotheses were supported by the data. No significant relationship was established between the criterion and any of the predictive indices.

2. The results of this study raise considerable doubt as to the validity of Bordin's theory relating self-concept and occupational stereotype

to vocational interests. Shortcomings of methods used in this investigation make a definite assessment of the theory difficult; however, lack of any significant findings suggest that the theory may have only limited usefulness.

3. Lastly, suggested improvements in methodology and procedure for future investigations were made.